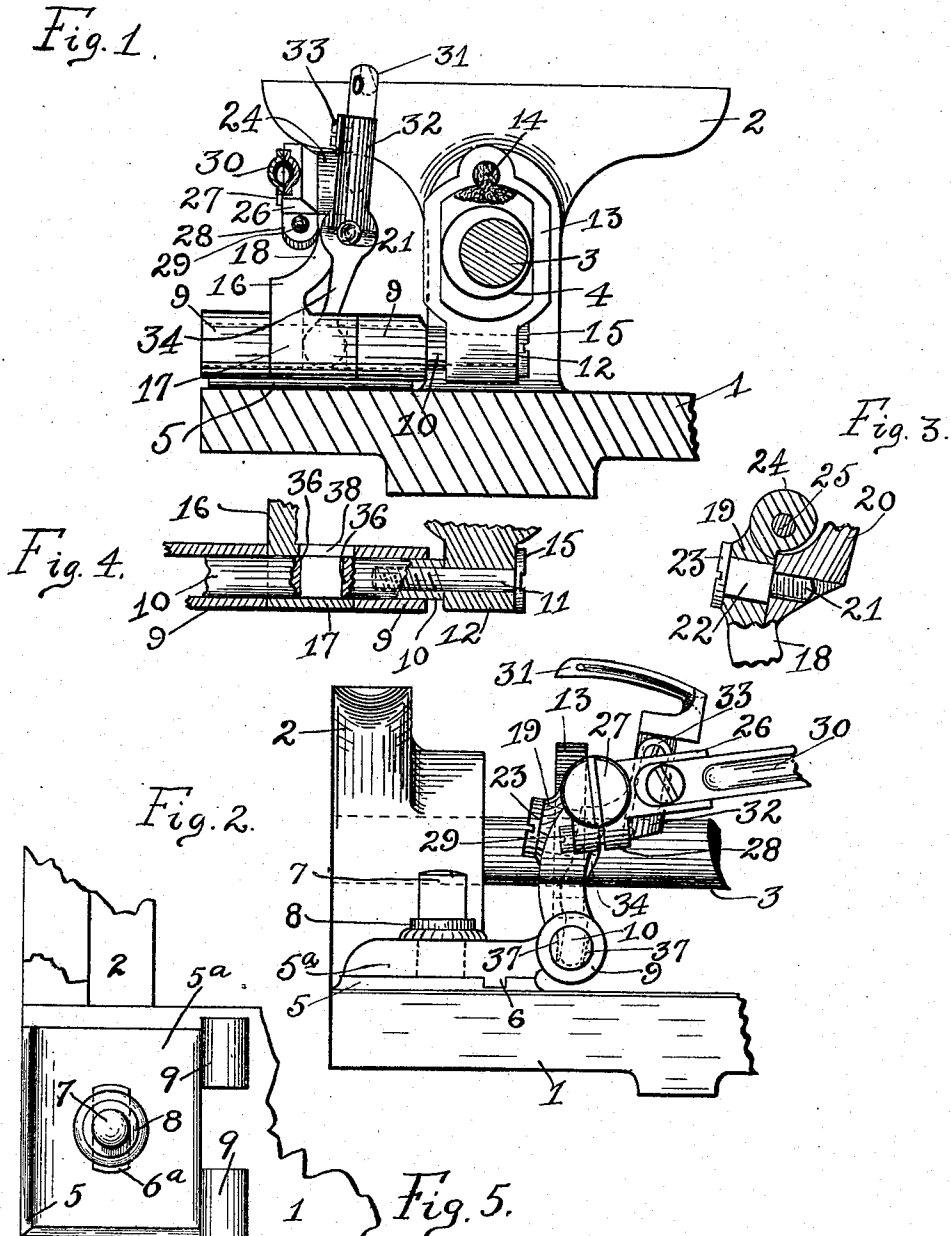


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 LOOPER MECHANISM FOR SEWING MACHINES.  
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## LOOPER MECHANISM FOR SEWING-MACHINES.

933,407.

Specification of Letters Patent.

Patented Sept. 7, 1909.

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*To all whom it may concern:*

Be it known that I, JOHN P. WEIS, a citizen of the United States, residing in Nyack, New York, have invented a new and useful Improvement in Looper Mechanism for Sewing-Machines, of which the following is a description.

This invention relates to sewing machines, and particularly to the looper mechanism thereof.

An object of this invention is to provide a chain-stitch looper mechanism which will be simple and compact in its structure and applicable to any ordinary chain-stitch machine.

Another object of this invention is to provide a chain-stitch looper mechanism, all the movements of which will be positive, certain and direct.

Other objects will appear during the course of this description and, with them all in view, this invention consists in the parts, features and combinations of elements hereinafter described and claimed.

In the accompanying drawings: Figure 1 shows so much of a sewing machine, as is deemed necessary to illustrate the application of my invention, the bed-plate and the driving-shaft of the machine being shown in transverse section, as is also the looper-rod, and the looper mechanism being shown in rear-end elevation; Fig. 2 is a front elevation of Fig. 1; Fig. 3 is a sectional detail showing the construction of the pivotal connection between the looper-carrier and its support; Fig. 4 is a detail sectional view showing the connection between the eccentric yoke and the looper-carrier and its support; and Fig. 5 is a top-plan view of a portion of the bed-plate showing the adjustable bracket, portions of the bed-plate and the hanger being broken away.

In the figures, 1 indicates the bed-plate of the machine, 2 the front standard or support for the cloth-plate and in which the front end of the driving-shaft 3 is journaled. The shaft 3 carries the eccentric 4. The front end of the bed-plate, adjacent the standard 2, is provided with a lug or boss 5, for the support of a bracket 5<sup>a</sup>, which is secured on the boss 5 by means of the depending rib 6, entering a transverse groove in the boss 5, of corresponding formation. This rib 6 properly locates the bracket 5<sup>a</sup> and also prevents twisting or turning movement of the

bracket 5<sup>a</sup>, in the boss 5. A screw-bolt 7 extends vertically from the boss 5, through an elongated slot 6<sup>a</sup> in the bracket extending transversely thereof, and receives a binding-nut 8 for securely clamping the bracket 5<sup>a</sup> in place on the bed-plate 1, and rendering the same adjustable toward and from the standard 2. The bracket 5<sup>a</sup> has extending rearwardly therefrom journal bearings or sleeves 9, in which is received the sliding pin, bar or short shaft 10, the rear end of which receives a screw, the smooth portion 11 of which receives the depending portion 12 of the eccentric yoke 13, which receives and engages the eccentric 4. The upper end of the yoke 13 is formed to provide a receptacle for the reception of any suitable packing 14, which may absorb, or to which may be applied, oil or other suitable lubricant to ease the action of the eccentric on the side bars of the yoke 13, it being observed that the end bars of said yoke are not acted upon by said eccentric. The head 15 of the screw clamps the yoke against the end of the shaft 10, as shown in the sectional view of Fig. 4. By this construction, it will be understood that the shaft 10 and the yoke 13 are rigidly and firmly joined, so as to have identically the same movements together and no movements independently of each other. This movement which is imparted by the eccentric 4, engaging the side bars of the yoke 13, is a right-line, longitudinal reciprocation imparted to the shaft 10, in its bearings 9.

A looper-support 16 is journaled upon the shaft 10, between the two bearings 9, of the bracket 5<sup>a</sup>, the journal bearing of the support being provided by the enlarged sleeve or hub 17, surrounding and loosely moving on the said shaft 10 as an axis, and playing easily between the two journals 9. By this structure the support 16 has no lateral movement on the shaft 10 and has only a rocking movement on said shaft. The particular form or shape of the support 16 is not material, but I have shown the same as being provided with the curved off-set portion 18 and with the boss or enlargement 19,—see Fig. 3,—for the reception of the journal of the looper-carrier 20. The journal of the carrier is formed by means of a screw, the reduced screw-threaded end 21 of which enters a screw-threaded aperture or bore in the looper-carrier 20, and the enlarged, smooth,

bearing-portion 22 of which has its bearing in the boss 19 of the support 16, and the head 23 of which suitably clamps the parts together, permitting the necessary freedom of action. Viewing Fig. 1, it will be seen that this construction permits a lateral rocking or pivotal movement only of the looper-carrier on and relatively to its support. The support 16 is extended beyond the boss 19 into a circular, broadened ear 24 for the reception of a screw 25, which firmly binds the said support to socket 26, the same being clamped to the ear 24, by the head 27 of said screw 25. The socket 26 is clamped upon the body of the screw 25, by means of the split-portion 28 and the screw 29. Thus, a pivotal connection is provided between the support 16 and the pitman or connecting-rod 30, the latter being driven or actuated by any suitable means, so as to impart to the support 16 the requisite rocking movement, which in turn imparts to the looper 31, held in the socket 32 of the carrier 20, a longitudinal, reciprocating movement in the arc of a circle about the shaft 10 as an axis. A screw 33 clamps the stem of the looper 31 in the socket 32 of the looper-carrier 20, in a manner to provide for both lateral and vertical adjustments of the looper, relatively to the needle. Below its pivotal point the looper-carrier 20 is provided with the depending leg 34, the extreme lower end of which is formed into the enlarged, circular, slabbed head 35; that is to say, the head has a circular periphery and is flat back and front, as clearly shown in Figs. 1, 2 and 4. The circular periphery of the head 35 engages, at opposite points, the end walls 36, formed by a transverse slot in the shaft 10, the side walls of which slot are caused to flare or diverge slightly from bottom to top, as shown at 37 in Fig. 2 by dotted lines. Thus, it will be seen that the periphery of the head 35 snugly but pivotally engages the shaft 10, substantially in the line of its longitudinal axis, and that transversely or laterally the said head is free from, and does not engage, the walls of the slot in the said shaft 10. The walls 37 of the slot in the said shaft 10 are sufficiently flared to permit of the movement of the looper-carrier with the looper-support to the extent necessary to impart to the looper 31 its longitudinal reciprocations, without engaging said walls and, hence, also without affecting the shaft 10. The snug or pivotal engagement, of the head 35 with the walls 36 of the slot of the shaft 10, is provided so that the right-line reciprocation of the said shaft 10 will impart to the looper-carrier 20 a slight vibratory movement on its fulcrum 21 in the support 16, and this without in any manner affecting the rocking movement of the said support 16 on, or around, the said shaft 10. In order to permit the rocking movement of the

looper-carrier 20 relatively to and on the support 16, the extended sleeve or journal 17 of the latter is, at its top, longitudinally slotted and the leg 34 of the looper plays therein, as will be clearly understood.

To enable the looper to be adjusted properly with reference to the needle, the bracket 5<sup>a</sup>, as previously stated, is rendered adjustable transversely of the machine; that is to say, by moving the bracket in, or to the right in Fig. 1, the needle can be made to run very close to the back of the looper as said needle descends. The proper adjustment is to set the bracket so that the looper, on its forward movement, will pass close to, without touching, the needle and on its backward movement will be in position such that the needle, on its downward movement, will just avoid the looper and slide between the looper and its thread to enchain the latter with the needle thread.

It being borne in mind that the longitudinal reciprocation of the looper is much more extensive than the lateral vibration thereof, it will be readily understood that the longitudinal reciprocation of the shaft 10 is comparatively slight or short and, hence, the vibration of the looper-carrier 20 on the support 16 is slight, being only sufficient to enable the body of the looper to pass from one side to the other of the path of reciprocation of the needle for the usual purposes. Furthermore, it will be understood that the support 16 has only a rocking movement on and independently of the shaft 10, while the looper-carrier partakes of the motion of, or derives motion from, the support 16 and also has motion imparted to it from the shaft 10; that is to say, the right-line reciprocation of the shaft 10 imparts vibratory movement to the looper-carrier 20 on and independently of the support 16, while the latter, rocking only on the shaft 10, imparts bodily rocking movement to the looper-carrier 20, this bodily movement of the looper-carrier being permitted by the form of the slot in the shaft 10, and the said vibratory movement of the looper-carrier on the support 16 being permitted, without affecting the said support, by reason of the fact that the shaft 10 slides in and independently of the said support 16. The bodily rocking movement of the looper-carrier with the support imparts the longitudinal reciprocations to the looper.

As above noted, and as shown in the drawings, the shaft 10 and yoke 13 are rigidly clamped together by the screw-head 15 binding the depending portion 12 against the end of said shaft, thus causing said yoke and shaft to move in right lines together and preventing said shaft having a turning movement or axial oscillation. This necessitates providing the transverse slot in said shaft with the flared longitudinal walls 37 shown

by dotted lines in Fig. 2, to avoid interference of the head 35 of leg 34 with said shaft when the looper-carrier is given its longitudinal movements. This construction, though sometimes preferable, is not absolutely essential, as the smooth portion 11 of the screw, which joins the yoke 13 and shaft 10, may be a journal for the shaft 10 in the depending portion 12 of said yoke, and the head 35 may fit snugly in the transverse slot of shaft 10 between the side walls of said slot and have no movement independently of said shaft. Thus constructed, when the support 16 is rocked, also rocking the looper-carrier 20, the head 35 would give to shaft 10 a slight rocking movement in the bearings 9. This rocking movement of shaft 10, would be, however, very slight owing to the distance between the pivotal point 21 and said shaft. Hence, there is no functional difference between the two constructions or forms of mechanism, and while the shaft in one instance would have a rocking movement and in the other none, the rocking movement would be so slight as to amount to nothing except the easing of the connection between the shaft 10 and the head 35, and depending portion 12 of the yoke. Therefore, though I contemplate a structure wherein the shaft 10 has a slight rocking movement, such movement does not mark a difference, over the construction shown in the drawings, in the ultimate result or function of the mechanism as a whole, because in neither instance is the support 16 or carrier 20 fixed to the shaft 10, being on the contrary independent of said shaft and deriving no motion or function from the rocking motion thereof. Hence, the claims, which may appear to be specific to the mechanism shown in the drawings, my purpose shall also comprehend and include the alternative construction described.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A looper mechanism comprising a looper-support confined to oscillating movements, a looper-carrier journaled on said support so as to have vibratory movements thereon, means for actuating the said support, and means for actuating the said carrier, comprising a shaft confined to right-line reciprocations and affording a journal upon which the support rocks.

2. A looper mechanism comprising a support, a looper-carrier pivotally connected to said support, means for actuating the support, and means for actuating the looper-carrier independently of its support, comprising a shaft passing through said support and confined to right-line reciprocations relative thereto.

3. A looper mechanism comprising a support, a looper-carrier pivotally connected to said support, means for actuating said support, and means for actuating the looper relatively to the support, comprising an eccentric, an eccentric-yoke, and a shaft, the shaft and yoke being rigidly connected together and confined to right-line reciprocations.

4. In combination, a driving-shaft, a second shaft arranged at a right-angle thereto and confined to right-line reciprocations, a support journaled on said second shaft and movable independently thereof, a looper carried by said support and connected to said second shaft, means for actuating the said shaft from the driving-shaft, and means for actuating the support.

5. A looper mechanism for sewing machines comprising a bracket, a support journaled in said bracket, a looper-carrier connected to said support, means for actuating the support, and means for actuating the looper-carrier on the support, comprising the journal of the latter.

6. A looper mechanism for sewing machines comprising an oscillating support, a looper-carrier pivotally connected thereto, means for rocking the support, and means for actuating the carrier on the support, including the journal of the latter.

7. A looper mechanism for sewing machines comprising a support, a looper-carrier connected thereto, a looper secured to the carrier, means for actuating the support, and means for actuating the carrier independently of the support, said means comprising a rotating eccentric, a yoke embracing the latter, and a reciprocating shaft rigidly connected to the yoke and pivotally connected to the carrier, whereby said shaft is confined to movements in a single plane at an angle to the plane of movement of the support.

8. A looper mechanism comprising a looper, a looper-carrier, a support for the latter, mechanism for imparting to the support and carrier positive movements in unison and to the carrier positive movements independently of the support and at an angle to the other movements, a bracket carrying the support, and means by which the same may be adjusted transversely to the path of movement of the support, whereby the support, carrier and looper may be accurately positioned to enable the looper to cooperate with the needle to properly take the loop.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN P. WEIS.

Witnesses:

CHAS. McC. CHAPMAN,  
M. HERSKOVITZ.